



4x T1/E1/J1 to Fiber Transport Mux

Point System™ Slide-In-Module Media Converters

C4TEF10xx-10x



NEW

Convert Copper to Fiber

These products offer a low cost transport capability for four T1/E1/J1 and one RS232 data channel line (x4TEF10xx-10x). The offering will provide copper connections compatible with G.703 and AMI/B8ZS/HDB3; while the optical connection will run at 155Mbps. A hardware-based solution guarantees the constant bit rate of TDM transport without requiring traffic management. The product provides physical layer status monitoring and alarm classification functions for Telecom operators to **manage their fiber optic network and reduce operation and maintenance costs**. Target applications of the converter include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber-to-the-MDU and Fiber-to-the-Home.

Features

- ▶ Automatic Link Restoration (*see next pages*)
- ▶ Remote Management (*see next pages*)
- ▶ Local and Remote Loopback (*see next pages*)
- ▶ AIS/TAOS
- ▶ LEDs for each data port
- ▶ DIP switches for line code, line length, local loopback or remote loopback
- ▶ T1/E1/J1 mode settings
- ▶ Dry Relay Contacts on each TDM port
- ▶ Mirror Port (SNMP selectable)
- ▶ Local (AUX) Management Interface (RS232 connector)
- ▶ Switch selection for Data or Management mode on RS232 interface
- ▶ Access to complete status information on local and remote device
- ▶ Access to local and remote configuration
- ▶ Switch or SNMP selected Baud rate operation
- ▶ Remote Firmware Upgrade (*see next pages*)

SNMP Management Features

- ▶ Report local converter status:
 - Fiber Link Status
 - Copper Link Status for each T1/E1
 - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
 - AIS detected Fiber & Copper
 - Model Number
 - Copper & Fiber Connectors
- ▶ Local command operations include:
 - Loopback Fiber & T1/E1 per channel
 - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link
 - Serial connection speed and parity (Software Mode)
 - T1/E1 Mirror Port Modes (Port Trapping)
 - Boot-load firmware upgrades
- ▶ Remote converter status:
 - Fiber Link status
 - Copper Link Status for each T1/E1
 - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
 - AIS detected Fiber & Copper
 - Model Number
 - Copper & Fiber Connectors
- ▶ Remote Commands:
 - Loopback Fiber & T1/E1 per channel
 - Serial connection speed and parity (Software Mode)
 - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link

Specifications

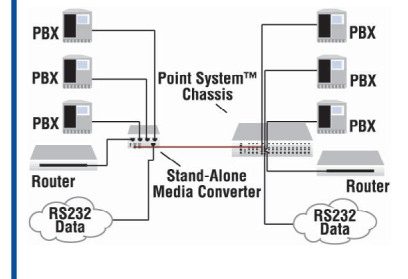
Standards	Telecordia TR-NWT-001089: FCC Part 68, UL1459 T1/E1 Physical layer: ITU-T, ANSI, AT&T, ETSI European Technical Standard: TBR 12 British Technical Publication: PD 7024: 1994 (NTR 4)
Fiber Optic Connector Specs	
C4TEF1011-100 & C4TEF1013-100	Min TX PWR: -19.0 dBm Max TX PWR: -14.0 dBm RX Sensitivity: -30.0 dBm Max In PWR: -14.0 dBm Link Budget: 11.0 dB
C4TEF1014-100	Min TX PWR: -15.0 dBm Max TX PWR: -8.0 dBm RX Sensitivity: -31.0 dBm Max In PWR: -8.0 dBm Link Budget: 16.0 dB
C4TEF1015-100	Min TX PWR: -8.0 dBm Max TX PWR: -2.0 dBm RX Sensitivity: -34.0 dBm Max In PWR: -7.0 dBm Link Budget: 26.0 dB
C4TEF1016-100 & C4TEF1017-100	Min TX PWR: -5.0 dBm Max TX PWR: -2.0 dBm RX Sensitivity: -34.0 dBm Max In PWR: -7.0 dBm Link Budget: 29.0 dB
C4TEF1035-100	Min TX PWR: 0.0 dBm Max TX PWR: 5.0 dBm RX Sensitivity: -36.0 dBm Max In PWR: -3.0 dBm Link Budget: 36.0 dB
Single Fiber Products	
C4TEF1029-100 & C4TEF1029-101	Min TX PWR: -13.0 dBm Max TX PWR: -6.0 dBm RX Sensitivity: -32.0 dBm Max In PWR: -3.0 dBm Link Budget: 19.0 dB
C4TEF1029-102 & C4TEF1029-103	Min TX PWR: -8.0 dBm Max TX PWR: -3.0 dBm RX Sensitivity: -33.0 dBm Max In PWR: -3.0 dBm Link Budget: 25.0 dB
Dimensions	Width: 1.72" [44 mm] Depth: 5.0" [127 mm] Height: 3.4" [86 mm]
Power Consumption	6.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES-003
Warranty	Lifetime

Ordering Info

Product Number	Port 1	Ports 2-5	Port 6
C4TEF1011-100	1300nm multimode (ST) [2 km / 1.2 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1013-100	1300nm multimode (SC) [2 km / 1.2 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1014-100	1310nm single mode (SC) [20 km / 12.4 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1015-100	1310nm single mode (SC) [40 km / 24.9 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1016-100	1310nm single mode (SC) [60 km / 37.3 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1017-100	1550nm single mode (SC) [80 km / 49.7 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1035-100	1550nm single mode (SC) [120 km / 74.6 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
Single Fiber Products <i>Note: Recommended use in pairs (see next pages)</i>			
C4TEF1029-100	1310nm TX / 1550nm RX single fiber single mode (SC) [20 km / 12.4 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1029-101	1550nm TX / 1310nm RX single fiber single mode (SC) [20 km / 12.4 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1029-102	1310nm TX / 1550nm RX single fiber single mode (SC) [40 km / 24.9 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]
C4TEF1029-103	1550nm TX / 1310nm RX single fiber single mode (SC) [40 km / 24.9 miles]	RJ-48 [1.5 km / 0.9 miles]	6-pin DIN [3 m / 10 ft.]

Note: C4TEF cards cannot be used with the 1-Slot Point System™ Chassis

Application



ADVANCED PRODUCT FEATURES

► Automatic Link Restoration

Transition Networks's converters will automatically re-establish link in all network conditions.

► No need to reset devices

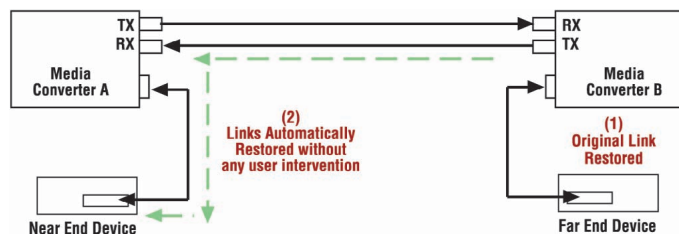
Transition Networks's converters will automatically re-establish link when connected to switches if link was lost. With other manufacturers' converters the user must reset the converter to re-establish the link.

► Auto-Negotiation Enabled

Automatic Link Restoration allows the users to continue using Auto-Negotiation with Link Loss Notification features. With other manufacturers' converters the user must disable Auto-Negotiation and hard set the link.

► Link Pass Through Activated in both directions

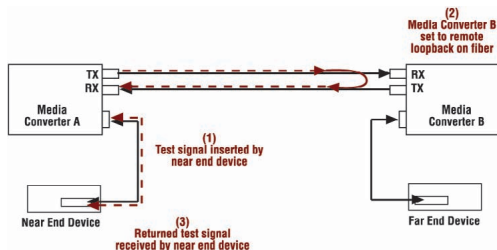
Automatic Link Restoration on Transition Networks's products allows users to continue using Link Loss Notification feature activated in both directions. Many competitive solutions allow for Link Loss Notification activation only in one direction. If Link Loss feature is activated in both directions, competitive products are put in a "deadly embrace" and they cannot restore the link without resetting the converters.



► Loopback

Select Transition Networks products are equipped with Loopback. This feature puts a converter in a special mode that enables the device to loop back the signal from the RX port to the TX port on either media for testing and troubleshooting purposes. Test signals from a tester (Firebird, etc.) can then be inserted into the link and looped back as received by a device to test a particular segment of the link (i.e. copper or fiber). Loopback can be either local or remote depending on the location of the converter in the link.

- Allows network diagnostics from local or remote location
- Quickly pinpoints problem areas of end to end link by testing a particular segment



Some converters have separate copper and fiber loopback functions that can be enabled separately, while others will loopback both copper and fiber at the same time when enabled. Please refer to the specific product page for details.

If someone tells you media conversion is a commodity product that anyone can bring to market, they probably haven't looked at the extensive product suite offered by Transition Networks. With the industry's most comprehensive offering of full-featured products, Transition's media converters stand out as "the choice" among industry IT professionals.

Generally, media converters are low-level OSI model devices with no IP or MAC addresses and therefore are transparent to the network. This "transparency" makes them very inexpensive and easy to use, but also can make troubleshooting the network very difficult. In an effort to overcome this difficulty and to make media converters "visible" to network managers, Transition has designed their full-featured products to include the most advanced features on the market today.

► Remote Management

All chassis-based converters from Transition Networks® can be managed through SNMP. Now, select stand-alone products can also be managed through SNMP when used in conjunction with a chassis based converter. While chassis based products are generally placed in the telecommunications room, stand-alone converters are generally placed in remote locations away from network administrators. Remote in-band management over fiber allows administrators access to the remote device to check status and enable/disable features or the device itself.

- Visibility of remote converters for network administrators
- Allows for centralized management of media converters

ADVANCED PRODUCT FEATURES

► Remote Firmware Upgrade

New product features are continuously being added to Transition Networks's products. These improvements are also available for many products already installed in the field. Management modules and many media converters can be updated remotely via firmware upgrade. The remote upgrade feature eliminates the need to ship the products back to the manufacturer. The firmware upgrades can be performed by a user either locally via a Console port or remotely via TFTP.

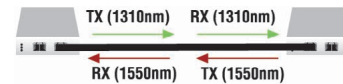
The upgrades do not require the reconfiguration of the SNMP management or converter feature settings.

► Single Fiber

Single fiber technology offers a 50% savings in fiber utilization. It is an attractive solution to maximize the usage of a limited number of fiber runs.

In a traditional optical link, a fiber pair consists of two uni-directional strands. The single fiber technology multiplexes two optical wavelengths of 1310nm and 1550nm into a single strand fiber. In a single fiber media converter each wavelength is responsible for either the transmit or receive function. Consequently, the bi-directional transmission is achieved by using a single strand. The converters in a single fiber scenario "match" each other's wavelengths. Converter A transmits at the wavelength of 1310nm and receives at 1550nm while the other converter transmits at 1550nm and receives at 1310nm. Therefore, converters are usually used in pairs.

Single Fiber



Single fiber technology is available on all Transition Networks Media Converters in maximum distance ranges from 20 to 80km.